

Clinical Performance of Foam vs Flocked Swabs collected from the anterior nares in a rapid antigen test for influenza A & B

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Background: Posterior nasopharyngeal (NP) secretions collected by aspiration, wash or swab are preferred for laboratory testing to diagnose respiratory viral infections including influenza. However, anterior nares (AN) swabs are easier to collect and better tolerated by patients, and some rapid influenza antigen tests are FDA-cleared for this specimen type. There are limited data on the performance of such tests with respect to the effects of swab composition.

Objective: This study compared the clinical sensitivity and specificity of a high absorbency polyurethane foam swab versus a high surface area nylon flocked swab collected from the AN for detecting influenza antigen.

Methods: For this prospective study, 100 children with symptoms suggesting influenza were recruited with informed consent from a large academic pediatric Emergency Department during the 2006-07 and 2007-08 influenza seasons. For each subject, a high absorbency foam (**Medical Wire Σ - Swab™**) and high surface area flocked nylon fiber (Copan USA) swab specimen was obtained from left and right AN and placed in a transport tube (no transport medium). A polyester swab specimen was also collected from the posterior NP on each subject and placed in M4 transport medium. The AN specimens were tested for influenza antigen in the main hospital laboratory using the Quidel QuickVue® Influenza A+B Test. The posterior NP specimens in M4 were tested by culture, DFA, and RT-PCR (Prodesse). The results of the latter tests were used to establish the clinical performance of the Quidel test performed on the two AN swab types.

Results: Influenza was diagnosed by culture and/or DFA in 49 subjects- 34 influenza A and 15 B. Influenza was diagnosed by RT-PCR in 56 subjects- 37 influenza A and 19 B.

Standard Method	Swab Type	Antigen Test Sensitivity (%)	Antigen Test Specificity (%)
Culture and DFA	Foam	78 (38/49)	94 (48/51)
	Flocked	61 (30/49)	98 (50/51)
RT-PCR	Foam	71 (40/56)	98 (43/44)
	Flocked	54 (30/56)	98 (43/44)

The intensity of the test band on most of the positive tests was greater with the foam swab.

Conclusions: High absorbency polyurethane foam swabs are preferable to high surface area nylon flocked fiber swabs for detection of influenza virus in the Quidel QuickVue® Influenza A+B Test.